REMARKS

Claims 41-59 were pending in the application. Claims 41-59 have been rejected under 35 U.S.C. §103(a) as being deemed unpatentable in view of Popelka (U.S. Patent No. 6,081,883), Bergsten (U.S. Patent No. 5,360,306), Wilson (U.S. Patent No. 6,718,347), Gall et al. (U.S. Patent No. 6,356,929, Tzelnic et al. (U.S. Patent No. 5,948,062), and Balabine (U.S. Patent No. 5,937,406). Of the Claims, Claims 41, 48 and 52 are independent. Claims 60-62 are newly added. Support for the newly added claims is in the Applicants' specification as originally filed. (*See* for example, Page 26 lines 5-9 and Page 54, lines 1-11.) Claims have been amended to clarify the Applicants' invention. The application as amended and argued herein, is believed to overcome the rejections.

Regarding Rejections under 35 U.S.C. § 103(a)

Claims 41-44 and 46 are rejected under 35 U.S.C. §103(a) as being unpatentable over Popelka et al. (U.S. Patent No. 6,081,883) in view of Bergsten (U.S. Patent No. 5,360,306) and further in view of Wilson (U.S. Patent No. 6,718,347).

Claim 45 is rejected under 35 U.S.C. §103(a) as being unpatentable over Popelka in view of Bergsten and Wilson, and further in view of Gall et al. (U.S. Patent No. 6,356,929.)

Claim 47 is rejected under 35 U.S.C. §103(a) as being unpatentable over Popelka in view of Bergsten and Wilson, and further in view of Tzelnic et al. (U.S. Patent No. 5,948,062.)

Claims 48-51 are rejected under 35 U.S.C. §103(a) as being unpatentable over Popelka in view of Bergsten and Wilson, and further in view of Balabine et al. (U.S. Patent No. 5,937,406.)

Claims 52-56 and 58 are rejected under 35 U.S.C. §103(a) as being unpatentable over Popelka in view of Wilson, and further in view of Balabine et al. (U.S. Patent No. 5,937,406.)

Claim 57 is rejected under 35 U.S.C. §103(a) as being unpatentable over Popelka in view of Wilson and Balabine and further in view of Gall.

An embodiment of the Applicants' invention is directed to a network storage system that includes a plurality of storage centers and a virtual file system. The storage centers each have a local file system and are located in geographically disparate locations and coupled to each other and a client through a wide area, public access network. The virtual file system stores file

system information for the local file systems to indicate to the client a storage locator including a public access network address for a storage center accessible via the virtual file system and a file identifier associated with contents of the file to uniquely identify the file stored at the storage center. The client to access the storage center via the virtual file system over the public access network to manage the files via the virtual file system with the storage resource locator. (*See* for example, Page 22, line 17-Page 23, line 10; Page 26, lines 5-14 and Page 11, lines 5-8.)

Turning to the cited references, Popelka discusses a scalable file server that includes a host processor, network processors and file storage processors that communicate over an interconnect bus. Client computers are connected over a network to one or more network processors. File requests received by a network processor from client computers are forwarded for processing over the interconnect bus to file storage processors. (*See* Popelka, Fig. 1.)

Cited reference Bergsten discusses a distributed storage system that includes a plurality of storage controllers coupled via a communications link. Each of the plurality of storage controllers is directly coupled to a respective host and a respective storage array. The storage controllers co-operate to allow any of the hosts to access data stored in any of the locally coupled storage arrays. (*See* Bergsten Fig. 1, storage controllers (3-1, .., 3-M), communications link (9), host (2-1, .., 2-M), storage array (4-1,...,4-M); col. 3, lines 36-63.)

Cited reference Balabine discusses a file system interface to a database. File system requests are transformed into database queries. (*See* Baladine, Abstract and Col. 5, lines 47-61.)

Cited reference Wilson discusses a system for maintaining coherence among copies of a database shared by multiple computers with data stored in storage subsystems. (*See* Wilson Fig. 3 and Abstract.)

Cited reference Gall discusses the use of IP Multicast for sharing jobs with other computers on a computer network.

Cited reference Tzelnic discusses a network file server including a cached disk storage subsystem and a plurality of data movers. Each data mover has a local cache of file directory information and can service any client request it receives for access to a file

To establish a prima facie case for obviousness under 35 U.S.C. 103(a), (1) there must be some suggestion or motivation to combine reference teachings; (2) there must be a reasonable expectation of success; (3) the references when combined must teach or suggest all the claim limitations. For the reasons discussed below, it is respectfully submitted that the Office has not

established a prima facie case under 35 U.S.C. 103(a) for claims 41-59 and that therefore, claims 41-59 are allowable.

The references when combined do not teach or suggest all the claim limitations.

Popelka's discussion of a file processor and a storage processor does not teach or suggest least the "a virtual file system ("VFS") to store file system information for the local file systems, the VFS to indicate to the client a storage resource locator ("SRL") including a public access network address for a storage center accessible via the VFS and a file identifier associated contents of the file to uniquely identify the file stored at the storage center, the client to access the storage center via the VFS over the public access network to manage the plurality of files via the VFS with the SRL" as claimed by the Applicants in claim 41.

In contrast, the network processor discussed by Popelka processes file system requests received from clients over a network and forwards them in the form of messages on a request/reply interface to file storage processors which manages files stored on mass storage devices. (*See* Popelka Col. 17, lines 5-26; Col. 2, line 67-col. 3 line 3.) The file system request that is received from the client is the same file system request that is forwarded over the request/reply interface to the file storage processor. In contrast to an embodiment of the Applicants' invention in which a virtual file system indicates to the client a storage resource locator including a public access network address for a storage center and a file identifier associated with contents of the file, Popelka's system does not teach or suggest a storage resource locator including a public access network address for the storage center and a file identifier associated with contents of the file.

The additional references Baladine, Wilson, Tzelnic and Gall fail to cure the deficiencies of Popelka noted above. The additional references Baladine, Wilson, Tzelnic and Gall fail to disclose or suggest at least "a file identifier associated with the contents of the file" and so fail to disclose the invention as recited in claim 41.

Claims 42- 47 are dependent claims that depend directly or indirectly on claim 41 which has already been shown to be non-obvious over the cited art.

Furthermore, these claims include additional features which are not suggested by the cited art. For example, the network processor discussed by Popelka does not teach or suggest at least the Applicants' claimed "storage port to translate a client file system request to a local file system request including the file identifier to identify the file in the local file system" as claimed

by the Applicants in claim 42. The network processor discussed by Popelka merely processes a file system request from the client by building a message compatible with a request/reply message protocol used by an interconnect bus prior to forwarding the file system request over the interconnect bus to a file system processor. The file system requests received from clients over a network are forwarded to file system processors which manage files stored on mass storage devices. (*See* Popelka Col. 17, lines 5-26; Col. 2, line 67-col. 3 line 3.)

In contrast, in an embodiment of the Applicants' invention, the client sends a local file request to the storage port as if the file was stored in its local file system. The translation to a network file request is performed in the storage port transparently to the client. Popelka does not even suggest translating a file request received from the client's file system. Baladine does not cure the deficiency in Popelka. Baladine's discussion of a conversion of file system request to a database query (e.g., SQL query) does not teach or suggest the Applicants' claimed "translate a file system request from the client's file system to a file system request compatible with the network storage system" as claimed by the Applicants in claim 42.

The storage arrays discussed by Bergsten do not teach or suggest the Applicants' claimed "intelligent storage node" as claimed by the Applicants in claim 44. As shown in Fig. 1 of Bergsten, each storage array includes a number of mass storage devices and is directly coupled to a single storage controller that includes a CPU. In contrast, the Applicants' claimed "intelligent storage node: includes "a processor core and a plurality of storage devices" as claimed by the Applicants in claim 44. (*See* for example, Applicants' specification Fig. 7, 700.)

Additionally, Gall's mere discussion of a method for registering computers on a computer network for a multicast group does not teach or suggest the use of a multi-cast protocol "to maintain file information at the DOSMs regarding files stored in said intelligent storage nodes" as claimed by the Applicants in claim 45.

Furthermore, Tzelnic's discussion of client requests that can be received by any data mover does not teach or suggest "a load balancing fabric to select a DOSM for an access request based at least in part on demand to access the storage center" as claimed by the Applicants in claim 47. In contrast, Tzelnic merely discusses the processing of a client request by a data mover after the request has been received by a data mover. (*See* Tzelnic Fig. 1, clients (54), network (25), data movers (26)).

Therefore, separately or in combination, Popelka, Balabine and Wilson do not teach or suggest the Applicants' claimed invention. Popelka is directed to a file server, Baladine and Wilson are directed to a database, Tzelnic is directed to a network file server and Gall is directed to data processing. One of ordinary skill in the art of file servers would not look to databases or data processing to provide "a virtual file system ("VFS") to store file system information for the local file systems, the VFS to indicate to the client a storage resource locator ("SRL") including a public access network address for a storage center accessible via the VFS and a file identifier assigned by the storage center to uniquely identify the file stored at the storage center" as claimed by the Applicants in claim 41. Even if combined, the present invention as now claimed does not result as argued above.

Claims 42-47 and 60 are dependent claims that depend directly or indirectly on claim 41, which has been shown to be non-obvious over the cited art. Independent claims 48 and 52 recite a like distinction and are thus non-obvious over the cited art. Claims 49-51 and 61 depend directly or indirectly on claim 48 and claims 52 -59 and 62 depend directly or indirectly on claim 51 and are thus non-obvious over the cited references.

Accordingly, the present invention as now claimed is not believed to be made obvious from the cited references. Removal of the rejections under 35 U.S.C. § 103(a) and acceptance of claims 41-60 is respectfully requested.

CONCLUSION

In view of the foregoing, it is submitted that all claims (claims 41-62) are in condition of allowance. The Examiner is respectfully requested to contact the undersigned by telephone if such contact would further the examination of the above-referenced application.

Respectfully submitted,

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